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(71) Applicant: NIPPON TELEGRAPH AND
TELEPHONE CORPORATION
Shinjuku-ku, Tokyo 163-19 (JP)

(72) Inventors:
• **Kawase, Nobuyuki**
Yokosuka-shi, Kanagawa (JP)

- Yamabayashi, Yoshiaki
Yokohama-shi, Kanagawa (JP)
- Uematsu, Yoshihiko
Minato-ku, Tokyo (JP)

**(74) Representative: Hall, Robert Leonard et al
Dibb, Lupton, Broomhead,
Fountain Precinct,
Balm Green
Sheffield S1 1RZ (GB)**

(54) A hitless path switching apparatus and method

(57) A hitless path switching method without a bit loss. A bit error in the same digital line signals is continuously monitored independently of a predetermined data blocks of a working path (51) and a protection path (61). If a bit error occurs in the working path and no bit error occurs in the protection path, a switching trigger is produced and the switching from the working path to the protection path is performed on the data block basis.

Only correct data are transferred to downstream apparatuses. A reliable hitless switching is achieved not only in response to a failure in its own path, but also in response to a bit error. Using data blocks of one frame length with an indicator for bit error check placed at its top makes an effective switching possible.

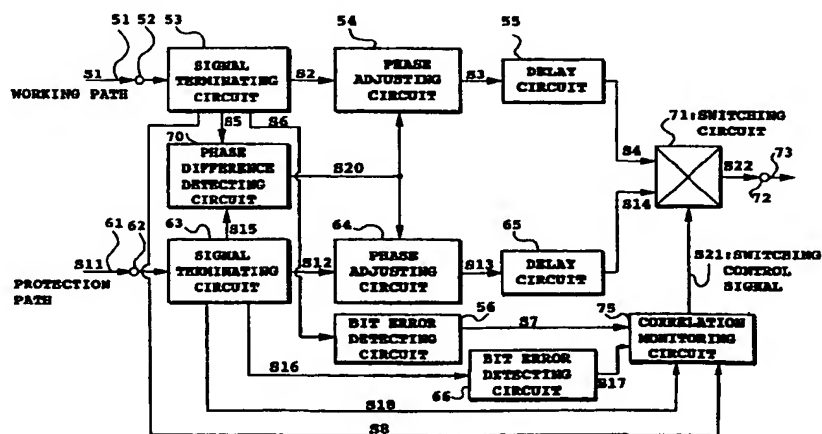


FIG. 3



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EUROPEAN SEARCH REPORT

Application Number
EP 95 20 1966

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Y	US 5 051 979 A (S. CHAUDHURI ET AL) * abstract; claim 1; figure 4 *	1-42	H04B1/74 H04L1/22 H04Q11/04 H04L29/14
Y	EP 0 585 061 A (NORTHERN TELECOM) * abstract; claims 1-4 *	1-42	
D,A	JP 05 344 104 A (NTT) * figures 4,5 *	1-18, 22-39	
D,A	1989 , INTERNATIONAL TELECOMMUNICATION UNION , GENEVA XP002005504 * CCITT recommendations G708, G709 *	1-18, 22-39	
A	US 5 230 002 A (YAMASHITA ET AL) * column 2, line 30 - line 34 * * column 2, line 37 - column 3, line 42 * * column 12, line 61 - column 14, line 20 *	19-21, 40-42	
D,A	ITU-T RECOMMENDATION I.432, March 1993, CH, pages 1-35, XP002022304 * section 4.2.1.3.1-4.2.1.3.3; Table 2; Figure 7 *	19-21, 40-42	TECHNICAL FIELDS SEARCHED (Int.Cl.6) H04B H04L H04Q
A	GB 2 270 820 A (GPT LIMITED) * page 5, line 1 - line 9 *	21,42	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 9 January 1997	Examiner Lindner, A
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document	

EPO FORM 1503 (03/92) (P04C01)



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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claims:
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

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- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☐ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



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LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims 1-18,22-39: System and method for hitless path switching in STM networks.
2. Claims 1,19-21,22,40-42: System and method for hitless path switching in ATM networks.